

Appln. No. 10/646,972
Amendment dated March 22, 2006
Reply to Office Action dated September 22, 2005

Amendments to the Claims:

No amendments are currently made to pending claims 1-14, but, in the interest of creating a self-contained document, Applicant presents the following listing of claims, the claims being identical to claims 1-14, as set forth in the Amendment, dated July 5, 2005. This following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for manufacturing a vaned diffuser (101) of a turbocharger, said method comprising casting as one piece a disc-shaped portion (103) defining one surface of the diffuser and a plurality of full diffuser vanes (113) extending from said surface in a plaster mold wherein said diffuser has an axis (115) for separating said disc-shaped portion (103) and full diffuser vanes (113) from a rigid mold thereof by translation along said axis.
2. (Original) A method for casting a vaned diffuser (101) of a type used in a turbocharger for receiving high velocity air from a compressor wheel and supplying compressed air to an internal combustion engine, said vaned diffuser consisting mainly of a non-ferrous metal or alloy having a melting point of less than about 700°C., and said diffuser comprising an upper surface (105) and a plurality of vanes (113) radially disposed on said upper surface, the method comprising: (a) providing a male metallic template (201) comprising at least the upper surface of said diffuser (105) and further comprising a central hub (205) having an axis (207) approximately perpendicular to said upper surface; (b) casting a female plaster mold corresponding to said male metallic template by contacting said template with a plaster slurry within a suitable frame and permitting said slurry to harden; (c) separating the female plaster mold from the male metallic template by pulling along said axis (303); (d) filling said female

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plaster mold with a molten non-ferrous metal or alloy having a melting point of less than about 700°C.; (e) cooling said mold to form a raw vaned diffuser casting (407); (f) separating the raw vaned diffuser casting from the female plaster mold by pulling along said axis (403); and (g) finish machining the raw vaned diffuser casting (407) to form the vaned diffuser (101).

3. (Previously Presented) The method according to claim 2, in which said vaned diffuser consists mainly of aluminum or an aluminum alloy.

4. (Original) The method according to claim 2, in which said hub (205) further comprises a plurality of ribs (209) radially disposed around said axis and axial to said surface.

5. (Original) The method according to claim 4, further comprising the step of evacuating said female plaster mold during step (e).

6. (Original) The method according to claim 4, wherein said vaned diffuser (101) is separated from said raw vaned diffuser casting (407) by machining away material disposed between said hub (205) and said vanes (113).

7. (Original) The method according to claim 6, wherein said ribs (209) and said vanes (113) of said male metallic template (201) are radially separated, wherein the ratio of the diameter of the template to the distance of the separation is from about 10 to about 15.

8. (Original) The method according to claim 2, further comprising the step, between steps (f) and (g), of machining the lower surface of said raw vaned diffuser casting.

9. (Original) The method according to claim 2, further comprising the step, between steps (f) and (g), of machining the outer circumferential edge of said raw vaned diffuser casting.

10. (Original) The method according to claim 2, further comprising the step, between steps (f) and (g), of tempering the raw vaned diffuser casting.

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11. (Previously Presented) The method of claim 9, in which said raw vaned diffuser casting includes a central hub having an axis approximately perpendicular to said upper surface as defined by said a male metallic template, and wherein said raw vaned diffuser casting is gripped for machining by said hub.
12. (Previously Presented) The method according to claim 1, in which said vaned diffuser consists mainly of aluminum or an aluminum alloy.
13. (Previously Presented) The method of claim 1, wherein said casting comprises casting as a one piece casting a disc-shaped portion (103) defining one surface of the diffuser, a plurality of full diffuser vanes (113) extending from said surface, and a central hub having an axis approximately perpendicular to said surface as defined by said surface of said disc-shaped portion, and wherein said one piece casting is gripped by said hub for machining to separate the hub from said disc-shaped portion.
14. (Previously Presented) The method according to claim 13, in which said hub (205) further comprises a plurality of ribs (209) radially disposed around said axis and axial to said axis.